

CLAIMS

1. A method for preparation of porous polyimide microparticles comprising, forming polyamide acid microparticles by pouring polymer solution prepared by dissolving polyamide acid containing 0.5 to 80 weight % of alkali metal salt to polyamide acid by 0.1 to 15 weight% concentration into a poor solvent selected from the group consisting of aliphatic solvents, alicyclic solvents, aromatic solvents, CS₂ and mixture of two or more these solvents and the temperature of which is adjusted to the range from -20°C to 60°C, wherein particle size of said polyamide acid microparticles is adjusted to 50 nm to 10000 nm by controlling the temperature of said poor solvent, pore size of said polyamide acid microparticles is adjusted to the range from 20 nm to 500 nm and porosity of said polyamide acid microparticles is adjusted to the range from 0.1% to 30% by controlling a content or a kind of said alkali metal salt, then treating said polyamide acid microparticles by chemical imidation or thermal imidation, or by thermal imidation after chemical imidation so that the particle size distribution, pore size and porosity of said polyamide acid microparticles are maintained.
2. The method for preparation of polyimide microparticles, after forming polyamide acid microparticles having particle size distribution, pore size and porosity of claim 1, then treating said polyamide acid microparticles by imidation so that the particle size distribution, pore size and porosity of said polyamide acid microparticles are maintained, wherein organic solvent used as the good solvent is at least one selected from the group consisting of N,N-dimethylacetamide, dimethylformamide, N-methylpyrrolidone (NMP), which are polar amide solvents or mixture of two or more these solvents, and poor solvent is at least one selected from the group consisting of decalin, cyclohexane, hexane, benzene, toluene, CS₂ or mixture of two or more these solvents.
3. The method for preparation of polyimide microparticles of claim 1, wherein chemical imidation is comprising, completing by adding acetic acid anhydride- pyridine mixed solvent to polyamide acid microparticles

dispersion having pore size and porosity controlled by contents or kinds of alkali metal salt by stirring.

4. The method for preparation of polyimide microparticles, after forming polyamide acid microparticles having particle size distribution, pore size and porosity of claim 1, then treating said polyamide acid microparticles by imidation so that the particle size distribution, pore size and porosity of said polyamide acid microparticles can be maintained, wherein organic solvent used as the good solvent is at least one selected from the group consisting of N,N-dimethylacetamide, dimethylformamide, N-methylpyrrolidone (NMP), which are polar amide solvents or mixture of two or more these solvents, and poor solvent is at least one selected from the group consisting of decalin, cyclohexane, hexane, benzene, toluene, CS₂ or mixture of two or more these solvents, and chemical imidation is comprising, completing by adding acetic acid anhydride-pyridine mixed solvent to polyamide acid microparticles dispersion having pore size and porosity controlled by contents or kinds of alkali metal salt by stirring.

5. The method for preparation of polyimide microparticles of claim 1, wherein weight average molecular weight of polyamide acid is in the range from 8000 to 220000.

6. The method for preparation of polyimide microparticles, after forming polyamide acid microparticles having particle size distribution, pore size and porosity of claim 1, then treating said polyamide acid microparticles by imidation so that the particle size distribution, pore size and porosity of said polyamide acid microparticles are maintained, wherein organic solvent used as the good solvent is at least one selected from the group consisting of N,N-dimethylacetamide, dimethylformamide, N-methylpyrrolidone (NMP), which are polar amide solvents or mixture of two or more these solvents, and poor solvent is at least one selected from the group consisting of decalin, cyclohexane, hexane, benzene, toluene, CS₂ or mixture of two or more these solvents and weight average molecular weight of polyamide acid is in the range from 8000 to 220000.

7. The method for preparation of polyimide microparticles, after forming polyamide acid microparticles having particle size distribution, pore size and porosity of claim 1, then treating said polyamide acid microparticles by imidation so that the particle size distribution, pore size and porosity of said polyamide acid microparticles can be maintained, wherein organic solvent used as the good solvent is at least one selected from the group consisting of N,N-dimethylacetamide, dimethylformamide, N-methylpyrrolidone (NMP), which are polar amide solvents or mixture of two or more these solvents, and poor solvent is at least one selected from the group consisting of decalin, cyclohexane, hexane, benzene, toluene, CS₂ or mixture of two or more these solvents, weight average molecular weight of polyamide acid is in the range from 8000 to 220000 and chemical imidation is comprising, completing by adding acetic acid anhydride-pyridine mixed solvent to polyamide acid microparticles dispersion having pore size and porosity controlled by contents or kinds of alkali metal salt by stirring.